

QUARTERLY PROGRESS REPORT

Project Title:	Automated Pedestrian Counter		
RFP NUMBER: 2008-06	NJDOT RESEARCH PROJECT MANAGER: Vincent Nichnadowicz		
TASK ORDER NUMBER: TO 217 / RU Acct 4-27252	PRINCIPAL INVESTIGATOR: Dr. Kaan Ozbay/Ranjit Walia		
Project Starting Date: 01/01/2008 Original Project Ending Date: 12/31/2009 Modified Completion Date:	Period Covered: 4 th Quarter 2008		

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Literature Search	9.04%	\$ 15,000	0.00%	\$ -	100.00%	\$ 15,000
1	Task 1: Comprehensive Literature Review & Policy Analysis	12.06%	\$ 20,000	25.00%	\$ 5,000	100.00%	\$ 20,000
2	Task 2: Selection of Pedestrian Counters	4.52%	\$ 7,500	50.00%	\$ 3,750	100.00%	\$ 7,500
3	Task 3: Select Deployment Sites	3.32%	\$ 5,500	80.00%	\$ 4,400	100.00%	\$ 5,500
4	Task 4: Develop Evaluation Plan	12.42%	\$ 20,600	60.00%	\$ 12,360	80.00%	\$ 16,480
5	Task 5: Implement Evaluation Plan	35.68%	\$ 59,192	15.00%	\$ 8,879	15.00%	\$ 8,879
6	Task 6: Develop Recommendations & Guidelines	17.32%	\$ 28,723	0.00%	\$ -	0.00%	\$ -
7	Task 7: Project Management, Final & Quarterly Reports	5.64%	\$ 9,361	25.00%	\$ 2,340	50.00%	\$ 4,681
	TOTAL	100.00%	\$ 165,876		\$ 36,729		\$ 78,039

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Project Objectives:



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Objective 1: Scanning

- Step 1. Assess current state-of-the art in pedestrian sensors
 - a. Conduct literature review related to the pedestrian counters
 - b. Develop and conduct interviews with a number of States
 - c. Develop Recommendations

Objective 2: PILOT STUDY

- Step 2. Develop experimental set-up
 - i. In close cooperation with NJDOT, select pedestrian counters to be tested.
 - ii. In close cooperation with NJDOT, select sites where field tests will be implemented.
- Step 3. Develop an evaluation plan
- Step 4. Implement the evaluation plan
 - i. Conduct field tests
 - ii. Analyze data
- Step 5. Interpret results of the field evaluation

Objective 3: SYNTHESIS

- Step 1. Develop recommendations and guidelines

Project Abstract:

NJDOT needs to collect **accurate** pedestrian related information in a **cost effective way**. According to the RFP issued by NJDOT, there are key gaps for pedestrian planning and mobility including the “*number of pedestrians using any given sidewalk, path, crosswalk, or other pedestrian facilities*”. The lack of such data is in turn clearly one of the one of the most significant barriers to the development of *safety conscious transportation plans* that includes pedestrians as well as vehicles. The same RFP states two important types of information needed for reliable decision-making:

- 1. better understanding of pedestrian behavior,
- 2. more accurate and complete inventory of pedestrian flow rates.

In the past, pedestrian count information was generally collected manually. However, since the manual collection of accurate pedestrian counts can be quite expensive and time-consuming, this approach is used sporadically and as a result does not yield comprehensive data from which to make informed



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policy and planning decisions. In fact, because of extensive time and labor requirements of manual data collection, which might also be relatively inaccurate, reliable pedestrian flow information is most of the time not available to the planners and decision makers. In addition to the lack of meaningful pedestrian flow data, other information related to the understanding of “pedestrian behavior” is almost never available. Unfortunately, even the literature is quite limited in terms of this information. Most recently, researchers at the UC Berkeley Safety Center conducted a comprehensive feasibility study along with a pilot test to assess the best ways to collect both types of information namely, flow and behavior (Greene-Roesel et al., 2007). One of the main findings of their report is the fact that automated counters are the most feasible way of collecting pedestrian data that is reliable and statistically significant in terms of its sample size. In turn, this study provides support for the need to assess the feasibility and use of automated pedestrian counters in New Jersey. Such data could fill a key information gap for the lack of this information which is one of the key parts of the overall puzzle for decision makers and planners who would like to consider pedestrian oriented multi-modal transportation options when developing their planning projects.

With the advent of new technologies that make it possible to automatically count and even track pedestrians in a wide variety of settings and transportation facilities, accurate and cost effective data collection has become a possibility. The major goals of this project as also stated in the original RFP can be summarized as follows:

1. Conduct a literature review on this topic and scope out the costs and feasibility of utilizing these technologies in NJ.
2. Create a pilot program where a limited number of automated pedestrian counters are purchased, deployed and field evaluated.
3. Assess the ease of use and value of the data to help the department to make better decisions about the feasibility of “using automated pedestrian counters” at a larger scale in the State.
4. Develop comprehensive yet easy to use guidelines for the deployment of various types of automated counters under various site-specific conditions

5.

1. Progress this quarter by task:

Phase 1- Literature Search: This task is completed.

Phase 2 - Research

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TEL: 732-445-0579 FAX: 732-445-3325

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Task 1 Comprehensive Review and Policy Analysis:

1. We completed Task 1. We delivered a final report for Task 1 (combined with the findings of Literature Search of Phase 1).

Task 2 Select and Recommend Pedestrian Counters To Be Evaluated¹:

1. After a meeting with NJDOT project team and presenting them with the selected counters, the research team decided to acquire two sensors approved by the NJDOT research panel, one for high volume and one for low volume intersections.
2. The purchase orders for both detectors are completed and they are ordered in the fourth quarter. Now, the research team is awaiting for the delivery of the two detectors with an anticipated delivery date of early December. These sensors are:
 - a. High Volume: Thermal camera
 - b. Low Volume: Eco-Twin + Pyro electric sensor

Task 3 Select Deployment Sites:

1. We prepared and presented to NJDOT a list of criteria that can be used.
2. With the input from NJDOT, we identified several locations. We did site visits to these possible locations. This will be presented to NJDOT at our next quarterly report meeting.
3. We will also recommend two sites for the high volume field tests and one site for low volume field test.

Task 4 Develop a Comprehensive Evaluation Plan:

1. Based on the review of the guidelines and reports that are previously prepared for the “Intelligent Transportation Systems” field evaluation study, a comprehensive field evaluation / test plan is prepared. This will be finalized during the fourth quarter.

¹ This report is being prepared in August and some of the tasks are in anticipation of what is expected to happen in September.



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Task 5 Implement Evaluation Plan

We will start the field evaluation of the “high volume scenario” in December 2008. This will be done in close collaboration with the manufacturer of the counter who will install the counter and train the research team.

Task 7 Project Management, Final and Quarterly Reports”

This is an on-going task that includes all the project management and reporting activities required by the project.

2. Proposed activities for next quarter by task:

Tasks 5, 6: These three tasks will be underway.

3. List of deliverables provided in this quarter by task (product date):

1. A presentation of the findings of Tasks 3 and 4.

4. Progress on Implementation and Training Activities:

1. There will be an on-site training for the installation and the calibration of the thermal camera.

5. Problems/Proposed Solutions:

Currently we do not have any problems. However, we are waiting for the delivery of the counters and we anticipate to get them in early December. The delay in delivery might cause a delay in our project schedule however the project schedule has sufficient flexibility and this delay will not cause any change in the completion date of the project.

Year 1 Budget	\$ 97,455
Years 1 & 2 Cumulative Budget	\$165,876
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$165,876
Modified Contract Amount:	
Total Project Expenditure to date	\$78,039
% of Total Project Budget Expended	47.05%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	Evaluation of the Automated Distress Survey Equipment		
RFP NUMBER: 2008-07	NJDOT RESEARCH PROJECT MANAGER: Vincent Nichnadowicz		
TASK ORDER NUMBER: TO 224 / RU Acct 4-23382	PRINCIPAL INVESTIGATOR: Carl Rascoe		
Project Starting Date: 05/01/2008 Original Project Ending Date: 07/31/2009 Modified Completion Date:	Period Covered: 4 th Quarter 2008		

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Conduct Literature Search	2.11%	\$ 3,000.00	34.00%	\$ 1,020	100.00%	\$ 3,000
2	Prepare Distress Identification Manual	9.27%	\$ 13,170.00	0.00%	\$ -	100.00%	\$ 13,170
3	Select Test Sections	24.71%	\$ 35,100.00	0.00%	\$ -	100.00%	\$ 35,100
4	Vendor Selection	5.29%	\$ 7,518.00	0.00%	\$ -	100.00%	\$ 7,518
5	Field Data Collection and Data Analyses	44.96%	\$ 63,850.00	40.00%	\$ 25,540	60.00%	\$ 38,310
6	Quarterly and Final Reports	13.65%	\$ 19,387.00	15.00%	\$ 2,908	30.00%	\$ 5,816
7		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
8		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
9		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
10		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
11		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
12		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
13		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
14		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
15		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
16		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
17		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
18		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
19		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
20		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
	TOTAL	100.0%	\$ 142,025		\$ 29,468		\$ 102,914

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Project Objectives:

Since there are multiple vendors with this type of equipment, the Department would like to evaluate and compare these units in a side-by-side pilot for the next generation Pavement Management System data collection vehicle. The evaluation of the Automated Distress Survey Equipment to supplement or replace the current manual visual distress data collection could significantly improve the quality and repeatability of the PMS distress data and help the Department make better pavement rehabilitation decisions. This is especially important in this time of limited financial resources.

The objectives of this research study are to:

- Evaluate the capabilities, limitations, and repeatability of the various automated distress survey equipment technologies on various distress types on different pavement surfaces types at various distress severity levels, lighting conditions and highway speeds.
- Assess the capabilities, limitations, and repeatability of the Department's PMS rater staff on various distress types on different pavement surfaces types at various distress severity levels, lighting conditions and highway speeds.
- Assess the level of effort and time required to process the images from the automated distress survey equipment
- Determine which types of distress are better collected with the automated distress survey equipment and which distress types should continue to be collected by PMS staff.
- Determine how the data collected by the automated distress data collection equipment can be incorporated into the pavement management system.

Project Abstract:

In order to address the research objectives, the research team will conduct a comprehensive literature search to summarize the manufacture's description of the distress data collection technology and other research conducted to assess the current state-of-the-art in pavement imaging and distress identification and evaluation. The research team will meet with the PMS staff to identify 15 one-mile test sections that have a variety of pavement types (BC, CO, and RC), distress types, severity levels and extents. The team will review the Department's current distress survey protocol and develop distress definitions, and evaluation criteria for use in the research study. Based on the content of the literature search and experience of the research team, a number of automated distress survey equipment vendors representing the various distress collection technologies will be identified. These vendors will be contracted to collect three runs on each test sites in one day and conduct analyses of the image data at NJ DOT.

The PMS staff will also collect distress data using the current protocol. The testing order of the test sites will be randomly assigned. The distress type, severity and extent levels of each site will be documented for comparison between the automated distress survey equipment and the PMS raters.



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Progress this quarter by task:

1. Roadware team prepared and delivered the summary cracking distress data for the test sites. The CAIT research team reviewed the data and had Roadware modify the crack data summary report.

The CAIT research team reviewed the NJDOT distress data.

The Dynatest team collected the distress data on the test sites. The data will be delivered in the next quarter.

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2. Proposed activities for next quarter by task:

The distress data from Dynatest will be evaluated.

The CAIT research team will develop a methodology for utilizing the automated distress data into the Department's SDI_m.

3. List of deliverables provided in this quarter by task (product date):

4. Progress on Implementation and Training Activities:

5. Problems/Proposed Solutions:

Year 1 Budget	\$142,025
Years 1 & 2 Cumulative Budget	
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$142,025
Modified Contract Amount:	
Total Project Expenditure to date	\$102,914
% of Total Project Budget Expended	72.46%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	Development of FWD Procedures Manual		
RFP NUMBER: N/A	NJDOT RESEARCH PROJECT MANAGER: Vincent Nichnadowicz		
TASK ORDER NUMBER: TO 220 / RU Acct 4-27288	PRINCIPAL INVESTIGATOR: Dr. Nenad Gucunski		
Project Starting Date: 01/01/2008 Original Project Ending Date: 12/31/2008 Modified Completion Date:	Period Covered: 4 th Quarter 2008- (This is a "Not A Final" Quarterly Report for this project, an addendum report for this quarter will be submitted at a later date. This report does not release the sponsor from claims for work done or services performed by the University during this time period)		

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Project Initiation	16.98%	\$ 15,350	0.00%	\$ -	100.00%	\$ 15,350
2	FWD Operation Procedure	25.27%	\$ 22,850	0.00%	\$ -	100.00%	\$ 22,850
3	FWD Data Analysis Procedure	20.05%	\$ 18,130	30.00%	\$ 5,439	100.00%	\$ 18,130
4	FWD Guide Preparation	20.15%	\$ 18,220	30.00%	\$ 5,466	100.00%	\$ 18,220
5	On-call Field and Laboratory Testing Services and Analysis	9.18%	\$ 8,300	0.00%	\$ -	0.00%	\$ -
6	Final Report and Quarterly Reporting	8.37%	\$ 7,573	50.00%	\$ 3,786	80.00%	\$ 6,058
7		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
8		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
9		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
10		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
11		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
12		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
13		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
14		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
15		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
16		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
17		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
18		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
19		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
20		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
	TOTAL	100.0%	\$ 90,423		\$ 14,691		\$ 80,608

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Project Objectives:

The main objective of this project is to develop FWD Testing and Analysis Guidelines for NJDOT – an *FWD Procedures Manual*. These guidelines will document the desired approach in FWD testing and analysis for the purpose of project-level rehabilitation design using MEPDG. The developed guidelines will clearly define:

- the FWD testing requirements,
- data analysis approach, and
- reporting requirements

in a way that ensures data integrity and also ensures that the FWD data is collected and analyzed in a consistent, technically sound, and state-of-practice manner. Additionally, the developed guidelines will serve the purpose of providing NJDOT with an improved specification for acquiring FWD testing and backcalculation services, as well as providing guidance for NJDOT internal staff conducting FWD testing and analysis.

Project Abstract:

For pavement rehabilitation projects, the MEPDG relies heavily on the material stiffness backcalculated from the deflection measurements taken from existing pavements. These measurements are typically made using FWD or HWD equipment. In recent years, several testing protocols and procedures for the collection of deflection data have been developed and used by different organizations. These protocols and procedures include information about load levels, number of drops per load level, temperature measurements, sensor configuration, etc. In order to ensure the consistency of the measurements, and therefore the estimation of material stiffness values that will be used in MEPDG, NJDOT will require a standard testing procedure and analysis protocols.

1. Progress this quarter by task:

Tasks 3 and 4 were completed and the draft of the final report, including the two case studies, was prepared and delivered for review and comments.

Tasks 3 and 4 include:

- FWD Data Analysis Procedure
- FWD Guide

2. Proposed activities for next quarter by task: Not applicable

3. List of deliverables provided in this quarter by task (product date):

Draft final report (10/30/08).

4. Progress on Implementation and Training Activities:

Training arrangements are in progress (Task 5).



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5. Problems/Proposed Solutions:

Year 1 Budget	\$90,423
Years 1 & 2 Cumulative Budget	
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$90,423
Modified Contract Amount:	
Total Project Expenditure to date	\$80,608
% of Total Project Budget Expended	89.15%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	Self Cleaning and De-Polluting Geopolymer Coatings for Graffiti Prevention and Removal-Demo Project		
RFP NUMBER: 200X-XXX	NJDOT RESEARCH PROJECT MANAGER: Robert Sasor		
TASK ORDER NUMBER: TO 211 / RU Acct 4-28959	PRINCIPAL INVESTIGATOR: Dr. P. Balaguru		
Project Starting Date: 10/15/2007 Original Project Ending Date: 10/15/2008 Modified Completion Date: 10/15/09	Period Covered: 4 th Quarter 2008		

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Literatuare Search	5.12%	\$ 5,123	5.00%	\$ 256	100.00%	\$ 5,123
2	Self Cleaning & Depolluting Study	28.00%	\$ 28,000	25.00%	\$ 7,000	60.00%	\$ 16,800
3	Coating Color & Field Application -A-	6.00%	\$ 6,000	5.00%	\$ 300	90.00%	\$ 5,400
4	Coating Color and Field Application -B-	6.00%	\$ 6,000	25.00%	\$ 1,500	75.00%	\$ 4,500
5	Graffiti Removal Method	24.50%	\$ 24,500	10.00%	\$ 2,450	40.00%	\$ 9,800
6	Geopolymer Cost Estimate	1.50%	\$ 1,500	0.00%	\$ -	0.00%	\$ -
7	Compare Geopolymer to Other Coatings	3.50%	\$ 3,500	0.00%	\$ -	0.00%	\$ -
8	Develop Generic Specification	3.00%	\$ 3,000	0.00%	\$ -	0.00%	\$ -
9	Field Demostration of Graffiti Removal	5.00%	\$ 5,000	10.00%	\$ 500	50.00%	\$ 2,500
10	Monitor Coating Long Term	6.00%	\$ 6,000	10.00%	\$ 600	20.00%	\$ 1,200
11	Final Re[prt and Quarterly Reporting	8.88%	\$ 8,877	0.00%	\$ -	0.00%	\$ -
12	Training and Implementation Plan	2.50%	\$ 2,500	10.00%	\$ 250	10.00%	\$ 250
13		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
14		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
15		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
16		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
17		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
18		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
19		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
20		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
	TOTAL	100.00%	\$ 100,000		\$ 12,856		\$ 45,573

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Project Objectives:

The primary objective of the proposed study is to demonstrate the effectiveness of the inorganic coating for graffiti prevention and removal. Since other formulations are available in the market, the study will have the following components.

- (1) Field demonstration of the inorganic coating for graffiti prevention and removal, and
- (2) Cost comparison of this coating with other available products, for both initial application and maintenance, based on the cost for graffiti removal.

In addition, laboratory and field studies will be conducted to document properties pertaining to:

- (3) Self cleaning, and
- (4) De-pollution.

Project Abstract:

A site has been selected for the demonstration application and testing of graffiti removal. It is a retaining wall located on a ramp from Route 1 North to the Woodbridge Mall. The wall is about 200 feet long and has an average height of about 7 feet and is easily accessible. Since the surface to be coated faces a parking lot, traffic control is not needed and sufficient space is available for both application of the coating and tests for graffiti removal. The wall and four concrete boards will be coated with the inorganic coating. Two concrete boards will be brought to the laboratory for evaluating the most efficient graffiti removal techniques and for studying self cleaning and de-pollution properties. The other two concrete boards will be kept outside the lab to test for outdoor exposure.

In addition, a specification will be prepared for using the geopolymer coating as an anti-graffiti, self cleaning and de-polluting surface treatment. A performance and cost comparison study between this coating material and other commercially available products will also be conducted.

1. Progress this quarter by task:

The literature search is complete. Color combination study is also complete. We placed new coating near Milltown.

2. Proposed activities for next quarter by task:

Complete the field application
Evaluate steam for graffiti removal techniques
Continue the self cleaning and de-pollution study.

3. List of deliverables provided in this quarter by task (product date):

None

4. Progress on Implementation and Training Activities:

None



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5. Problems/Proposed Solutions:

Year 1 Budget	\$58,123
Years 1 & 2 Cumulative Budget	\$100,000
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$100,000
Modified Contract Amount:	
Total Project Expenditure to date	\$ 45,573
% of Total Project Budget Expended	45.57%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	Dynamic Modulus of Hot Mix Asphalt		
RFP NUMBER: 2003-10	NJDOT RESEARCH PROJECT MANAGER: Camille Crichton-Sumners		
TASK ORDER NUMBER: TO 199 / RU Acct 4-26619	PRINCIPAL INVESTIGATOR: Ali Maher/Thomas Bennert		
Project Starting Date: 01/01/2007 Original Project Ending Date: 12/31/2008 Modified Completion Date: 6/30/2009	Period Covered: 4 th Quarter 2008		

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Mobilization	11.19%	\$ 25,000	0.0%	\$ -	100.0%	\$ 25,000
2	Literature Search	2.24%	\$ 5,000	0.0%	\$ -	100.0%	\$ 5,000
3	Develop Test Plan	2.24%	\$ 5,000	0.0%	\$ -	100.0%	\$ 5,000
4	Conduct E* Testing and Database Development	26.85%	\$ 60,000	0.0%	\$ -	95.0%	\$ 57,000
5	Compare Measured E* to Predicted E*	8.43%	\$ 18,835	5.0%	\$ 942	95.0%	\$ 17,893
6	Conduct Sensitivity Analysis of E*	15.66%	\$ 35,000	30.0%	\$ 10,500	100.0%	\$ 35,000
7	Conduct Round Robin Testing	11.24%	\$ 25,117	0.0%	\$ -	100.0%	\$ 25,117
8	Develop Final Database	7.83%	\$ 17,500	5.0%	\$ 875	95.0%	\$ 16,625
9	Final Report and Quarterly Reporting	14.32%	\$ 32,032	50.0%	\$ 16,016	85.0%	\$ 27,227
10		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
11		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
12		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
13		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
14		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
15		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
16		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
17		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
18		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
19		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
20		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
	TOTAL	100.00%	\$ 223,484		\$ 28,333		\$ 213,862

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Project Objectives:

The objective of the research project is to provide the NJDOT with a clear understanding of the dynamic modulus test and its precision, the typical E^* values of their native HMA materials, and the accuracy of the prediction equations that are proposed for use in the MEPDG.

Project Abstract:

The most critical parameter needed for the upcoming Mechanistic Empirical Pavement Design Guide (MEPDG) is the dynamic modulus (E^*), which will be used for flexible pavement design. The dynamic modulus represents the stiffness of the asphalt material when tested in a compressive-type, repeated load test. The dynamic modulus will be the key parameter used to evaluate both rutting and fatigue cracking. The computer software that will accompany the MEPDG will provide general default parameters for the dynamic modulus. However, caution has already been issued by the National Cooperative Highway Research Program (NCHRP) researchers as to the appropriateness of these parameters for regional areas. The major concern is that state agencies will use these default values blindly and sacrifice accuracy of the design. Hence, making the new mechanistic procedure no better than using a structural number (SN) with the old AASHTO method.

To ensure that the New Jersey Department of Transportation (NJDOT) will be prepared for the upcoming design procedure, a research proposal has been developed. The research proposal will encompass evaluating the dynamic modulus of approximately twenty different hot mix asphalt designs that are currently specified by the NJDOT. The dynamic modulus will be determined based on the most current testing protocol (AASHTO TP62). The dynamic modulus (E^*) will be represented using a technique called a *master curve*. The E^* master curve is a single curve that represents the asphalt materials stiffness relationship to loading frequency and temperature. The master curve for each material tested will be developed and its sigmoidal curve fitting parameters (α , β , γ , δ) determined. This procedure is called Level I for the MEPDG and will provide the most realistic results during design. The measured E^* values will be compared to that of the Witczak predictive equation and the Hirsch model. The Witczak predictive equation has been selected by the NCHRP researchers for the Level II and III design. The Level II will provide accurate results, although not as accurate as actually measuring the E^* in the laboratory. The predictive equation is based on the mix gradation, asphalt binder viscosity properties, and volumetric properties of the hot mix asphalt. The accuracy of the predictive equation will be determined, as well as possible methods to “shift” the predictive equation to more closely represent New Jersey materials.

Another important aspect of the research project is the development of a “precision-type statement” for use by the NJDOT regarding the dynamic modulus test. Currently, a precision statement does not exist regarding multiple laboratories. Eight laboratories were contacted and asked to participate in a round robin study regarding the dynamic modulus test. All laboratories are AMRL accredited for hot mix asphalt and will provide valuable information regarding the expected precision the NJDOT can expect if dynamic modulus testing is to be conducted by outside laboratories.



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1. Progress this quarter by task:

A No-Cost Extension (NCE) was provided so additional mixes can be added to the database to help “fill in the gaps” of the NJDOT E* Database for the Mechanistic Empirical Pavement Design Guide (MEPDG). A few different suppliers (R.E. Pierson) was not represented, as well as adding a few more 12H76 mixes (which is the primary surface course mix used in New Jersey) for inclusion in the database.

A MEPDG training class was provided to the Pavement Technologies Group at the NJDOT (the “client”) where a preliminary version of the E* Database Catalog was provided for use. The feedback of the catalog was good; however a few small modifications are going to be made which do not have anything to do with the dynamic modulus work itself.

2. Proposed activities for next quarter by task:

Complete testing of remaining plant mixes to complete NJDOT E* Catalog.

3. List of deliverables provided in this quarter by task (product date):

NA

4. Progress on Implementation and Training Activities:

NA

5. Problems/Proposed Solutions:

NA

Year 1 Budget	\$223,484
Years 1 & 2 Cumulative Budget	
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$223,484
Modified Contract Amount:	
Total Project Expenditure to date	\$213,862
% of Total Project Budget Expended	95.69%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	New Jersey State LTAP Technology Transfer Center (FHWA) 2008		
RFP NUMBER:		NJDOT RESEARCH PROJECT MANAGER: W. Lad Szalaj	
TASK ORDER NUMBER: 223 / 4-23049		PRINCIPAL INVESTIGATOR: Dr. Ali Maher	
Project Starting Date: 01/01/2008 Original Project Ending Date: 12/31/2008		Period Covered: 4th Quarter 2008-FINAL	

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Mobilization		\$ -	0.00%	\$ -	0.00%	\$ -
2	Maintain Contact Lists	3.18%	\$ 6,828	25.00%	\$ 1,707	100.00%	\$ 6,828
3	Publish Newsletter	8.74%	\$ 18,791	25.00%	\$ 4,698	100.00%	\$ 18,791
4	Distribute Technology Transfer Materials	3.75%	\$ 8,064	25.00%	\$ 2,016	100.00%	\$ 8,064
5	Provide Information Service	16.00%	\$ 34,414	25.00%	\$ 8,604	100.00%	\$ 34,414
6	Provide Training Courses	53.45%	\$ 114,918	25.00%	\$ 28,730	100.00%	\$ 114,918
7	Evaluate Effectiveness of Program	5.81%	\$ 12,481	25.00%	\$ 3,120	100.00%	\$ 12,481
8	Special Projects	9.07%	\$ 19,504	40.00%	\$ 7,800	100.00%	\$ 19,504
9		0.00%		0.00%	\$ -	0.00%	\$ -
10		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
11		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
12		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
13		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
14		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
15		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
16		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
17		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
18		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
19		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
20		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
	TOTAL	100.00%	\$ 215,000		\$ 56,675		\$ 215,000

Blue text is entered once at the beginning of the project

Green text is updated ever quarter

Black text is automatically updated or static



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Project Objectives:

The New Jersey Local Technical Assistance Program (LTAP) has a mission to become an information clearinghouse to foster a safe, efficient, environmentally sound transportation system by improving the skills and knowledge of the transportation industry through technology transfer activities, such as training, technical assistance and dissemination of resources.

The objectives of this project are to continue to diversify and expand the customer base, deliver quality customer service, communicate the program values to partners and clients, and enhance the technology transfer network, through the activities of the New Jersey Local Technical Assistance Program (LTAP).

Project Abstract:

The New Jersey Local Technical Assistance Program (LTAP) will continue to maintain mailing lists, publish a monthly newsletter, provide technical assistance, provide training, and evaluate the effectiveness of the program on an ongoing basis throughout the project.

The technology transfer services of LTAP have been expanded to support the transportation industry through the promotion of best practices, new research, products, and proven technologies that are applicable to New Jersey roadways.

Center Name: New Jersey LTAP

Reporting Period: October 1, 2008 to December 31, 2008

Program Dashboard

Total number of training sessions:	<u>15</u>
Total number of participants:	<u>716</u>
Total number of participant hours:	<u>7,942</u>
Total newsletter circulation:	<u>10,983</u>
Total number of LTAP/TTAP FTEs:	<u>2.5</u>



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Training Data

Safety

The Safety metric is divided into 2 categories: Highway Safety and Worker/Workplace Safety. Count the training your center conducted or had responsibility for conducting, such as training co-sponsored with a partner.

Highway Safety

Session Name	Session Length [hours]	Total # of Sessions	Total # of participants					Total # of Participants	Total Participant Hours
			Local	Tribal	State	Federal	Other		
Work Zone Safety Awareness Program	6	1	26				11	37	222
Annual Safety Forum	7	1	55		15		55	125	875
Traffic Control Coordinator Program	32	3	4		35		71	106	3,392
Traffic Control Coordinator Refresher Workshop	4	2	9		100		72	181	724
Road Safety Audit for Locals Workshop	7	1	16				11	27	189
Regional Work Zone Safety Workshops	5	3			70			70	350
CAMTEA/IMSA MUTCD Update	5	1	25				15	40	200
TOTAL	66	12	135		220		235	586	5,952

Infrastructure Management

Session Name	Session Length [hours]	Total # of Sessions	Total # of participants					Total # of Participants	Total Participant Hours
			Local	Tribal	State	Federal	Other		
Rubber Pavements Workshop	6	1	24		6		30	60	360
Freight Academy	45	1			30			30	1,350
TOTAL	51	2	24		36		30	90	1,710



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Workforce Development

Session Name	Session Length [hours]	Total # of Sessions	Total # of participants					Total # of Participants	Total Participant Hours
			Local	Tribal	State	Federal	Other		
NACE Fall Forum	7	1	29		3		8	40	280
TOTAL	7	1	29				8	40	280

Newsletter / Published Resources Data

Circulation

Name of Newsletter	Circulation				
	Local	Tribal	State	Federal	Other
LTAP E-News	1,858	8	920	161	714

Number of Articles per Focus Area

Newsletter Issue	Safety			Workforce Development	Infrastructure Management
	Highway	Worker	Work Zone		
Volume 10, Number 10	2	1		2	2
Volume 10, Number 11		1	1	3	1
Volume 10, Number 12	1	1	1	2	1

Materials Distribution Data

Material Types	Safety			Workforce Development	Infrastructure Management
	Highway	Worker	Work Zone		
Publications	275		2,262		90
CDs			500		
Videotapes					
DVDs					
Downloads					
Others [insert]					
TOTAL:	275		2,762		90

100 BRETT RD. PISCATAWAY NJ 08854-8058

TEL: 732-445-0579 FAX: 732-445-3325



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Technical Assistance Data

Estimate the total percentage of time spent by your Center staff providing technical assistance during the past quarter: **30%**

Activities Related to Program Stakeholders

Organization	Activities					
	# of times center distributed information for this organization (mail, e-mail, fax, etc.)	# of joint training sessions	# of joint conferences	# of joint special programs	# of articles reprinted in LTAP/TTAP newsletters from this organization	# of center staff participating in national program efforts
National Stakeholders						
FHWA (HQ, Resource Center)	4				3	2
AASHTO	1				1	
NACE						
APWA	3				5	2
TRB						1
Salt Institute						
State/Local Stakeholders						
FHWA Division	2		1			2
State DOT/govt	4		1	8		3
AASHTO Chapter						
NACE Chapter			1			1
APWA Chapter	8		1	1		2
ITE		2				2
Other Stakeholders						
NJ Society of Municipal Engineers						1
NJ Div of Highway Traffic Safety				1		2
NJ Asphalt Pavement Assoc.		1				1



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NJ WZS Partnership		3		1		2
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1. Progress this quarter by task, with specific deliverables:

A. Maintain Contact Lists

- The email list was updated for current New Jersey Mayors.

Revisions/Deletions

Ongoing

B. Publish Newsletter

- 3,661 individuals received each issue of the newsletter. Three issues of the newsletter were produced during this quarter. Electronic distribution of the newsletter occurred via e-mail.

Volume 10, Number 10

October 2008

Volume 10, Number 11

November 2008

Volume 10, Number 12

December 2008

C. Distribute Technology Transfer Materials

- 3,172 technical materials were distributed this quarter.

NJDOT Work Zone Safety Setup Guide

October-December 2008

New MUTCD Retro-reflectivity Requirements

October-November 2008

Teen Driver Work Zone Safety Packets

October-December 2008

D. Provide an Information Service

Technical Assistance

Ongoing

LTAP Stakeholder Meeting

October 3, 2008

APWA NJ Executive Committee

October 8, 2008

NLTAPA Executive Committee Meeting

October 20, 2008

ASCE Chapter Meeting

October 21, 2008

Teen Driver Press Conference

October 21, 2008

GPRI Conference Meeting

November 5, 2008

NJDOT Environmental Forum Planning Meeting

November 10, 2008

Safe Passages Conference Committee Meeting

November 12, 2008



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NLTAPA Roundtable Discussion	November 14, 2008
NLTAPA Executive Committee Meeting	November 17, 2008

NJSME Annual Meeting	November 19, 2008
APWA NJ Chapter Annual Meeting	November 20, 2008
Rutgers Paving Conference Planning Meeting	December 5, 2008
NLTAPA Executive Committee Meeting	December 15, 2008
APWA NJ Executive Committee	December 17, 2008
NJ Work Zone Safety Partnership Meeting	December 18, 2008

E. Training

Road Safety Audit for Locals Workshop	October 7, 2008
NJDOT Research Showcase	October 16, 2008
NACE Fall Forum	October 17, 2008
Regional Work Zone Safety Workshop	October 21, 2008
Traffic Control Coordinator Program	October 21-24, 2008
CAMTEA/IMSA MUTCD Update	October 23, 2008
Regional Work Zone Safety Workshop	October 23, 2008
Work Zone Safety Awareness Program	October 27, 2008
Regional Work Zone Safety Workshop	October 27, 2008
Freight Academy	October 27-31, 2008
Traffic Control Coordinator Program	October 28-31, 2008
Rubber Pavements Workshop	November 13, 2008
Annual Safety Forum	December 3, 2008
Traffic Control Coordinator Program	December 9-12, 2008
Traffic Control Coordinator Refresher Workshop	December 12, 2008

F. Evaluate the Effectiveness of the Program

Course Evaluations	Ongoing
Customer Survey	October-November 2008
October – December 2008 Quarterly Report	December 2008

G. Special Projects

Final Report of 2004 and 2005 Implementation Study	October 2008
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4. Progress on Implementation and Training Activities:

All of the activities of this technology transfer project, and their implementation dates are included above.

5. Problems/Proposed Solutions:

Year 1 Budget	\$215,000
Years 1 & 2 Cumulative Budget	
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$215,000
Modified Contract Amount:	\$
Total Project Expenditure to date	\$215,000
% of Total Project Budget Expended	100%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	New Jersey State LTAP Technology Transfer Center (STATE) 2008		
RFP NUMBER:		NJDOT RESEARCH PROJECT MANAGER: W. Lad Szalaj	
TASK ORDER NUMBER: TO 223 4-20725		PRINCIPAL INVESTIGATOR: Dr. Ali Maher	
Project Starting Date: 01/01/2008 Original Project Ending Date: 12/31/2008 Modified Completion Date:		Period Covered: 4th Quarter 2008-FINAL	

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Mobilization	0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
2	Literature Search	0.00%		0.00%	\$ -	0.00%	\$ -
3	Maintain Contact Lists	0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
4	Publish Newsletter	0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
5	Distribute Technology Transfer Materials	0.84%	\$ 504	100.00%	\$ 504	100.00%	\$ 504
6	Provide Information Service	31.77%	\$ 19,062	25.00%	\$ 4,766	100.00%	\$ 19,062
7	Provide Training Courses	33.04%	\$ 19,827	40.00%	\$ 7,931	100.00%	\$ 19,827
8	Evaluate the Effectiveness of Program	1.19%	\$ 712	25.00%	\$ 178	100.00%	\$ 712
9	Special Projects	33.16%	\$ 19,895	15.00%	\$ 2,983	100.00%	\$ 19,895
10		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
11		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
12		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
13		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
14		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
15		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
16		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
17		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
18		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
19		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
20		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
	TOTAL	100.00%	\$ 60,000		\$ 16,362		\$ 60,000

Blue text is entered once at the beginning of the project

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Project Objectives:

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The objectives of this project are to continue to diversify and expand the customer base, deliver quality customer service, communicate the program values to partners and clients, and enhance the technology transfer network, through the activities of the New Jersey Local Technical Assistance Program (LTAP).

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The technology transfer services of LTAP have been expanded to support the transportation industry through the promotion of best practices, new research, products, and proven technologies that are applicable to New Jersey roadways.

Center Name: New Jersey LTAP

Reporting Period: October 1, 2008 to December 31, 2008

Program Dashboard

Total number of training sessions:	<u>15</u>
Total number of participants:	<u>716</u>
Total number of participant hours:	<u>7,942</u>
Total newsletter circulation:	<u>10,983</u>
Total number of LTAP/TTAP FTEs:	<u>2.5</u>



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Training Data

Safety

The Safety metric is divided into 2 categories: Highway Safety and Worker/Workplace Safety. Count the training your center conducted or had responsibility for conducting, such as training co-sponsored with a partner.

Highway Safety

Session Name	Session Length [hours]	Total # of Sessions	Total # of participants					Total # of Participants	Total Participant Hours
			Local	Tribal	State	Federal	Other		
Work Zone Safety Awareness Program	6	1	26				11	37	222
Annual Safety Forum	7	1	55		15		55	125	875
Traffic Control Coordinator Program	32	3	4		35		71	106	3,392
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Road Safety Audit for Locals Workshop	7	1	16				11	27	189
Regional Work Zone Safety Workshops	5	3			70			70	350
CAMTEA/IMSA MUTCD Update	5	1	25				15	40	200
TOTAL	66	12	135		220		235	586	5,952

Infrastructure Management

Session Name	Session Length [hours]	Total # of Sessions	Total # of participants					Total # of Participants	Total Participant Hours
			Local	Tribal	State	Federal	Other		
Rubber Pavements Workshop	6	1	24		6		30	60	360
Freight Academy	45	1			30			30	1,350
TOTAL	51	2	24		36		30	90	1,710



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Workforce Development

Session Name	Session Length [hours]	Total # of Sessions	Total # of participants					Total # of Participants	Total Participant Hours
			Local	Tribal	State	Federal	Other		
NACE Fall Forum	7	1	29		3		8	40	280
TOTAL	7	1	29				8	40	280

Newsletter / Published Resources Data

Circulation

Name of Newsletter	Circulation				
	Local	Tribal	State	Federal	Other
LTAP E-News	1,858	8	920	161	714

Number of Articles per Focus Area

Newsletter Issue	Safety			Workforce Development	Infrastructure Management
	Highway	Worker	Work Zone		
Volume 10, Number 10	2	1		2	2
Volume 10, Number 11		1	1	3	1
Volume 10, Number 12	1	1	1	2	1

Materials Distribution Data

Material Types	Safety			Workforce Development	Infrastructure Management
	Highway	Worker	Work Zone		
Publications	275		2,262		90
CDs			500		
Videotapes					
DVDs					
Downloads					
Others [insert]					
TOTAL:	275		2,762		90



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Technical Assistance Data

Estimate the total percentage of time spent by your Center staff providing technical assistance during the past quarter: **30%**

Activities Related to Program Stakeholders

Organization	Activities					
	# of times center distributed information for this organization (mail, e-mail, fax, etc.)	# of joint training sessions	# of joint conferences	# of joint special programs	# of articles reprinted in LTAP/TTAP newsletters from this organization	# of center staff participating in national program efforts
National Stakeholders						
FHWA (HQ, Resource Center)	4				3	2
AASHTO	1				1	
NACE						
APWA	3				5	2
TRB						1
Salt Institute						
State/Local Stakeholders						
FHWA Division	2		1			2
State DOT/govt	4		1	8		3
AASHTO Chapter						
NACE Chapter			1			1
APWA Chapter	8		1	1		2
ITE		2				2
Other Stakeholders						
NJ Society of Municipal Engineers						1
NJ Div of Highway Traffic Safety				1		2
NJ Asphalt Pavement Assoc.		1				1
NJ WZS Partnership		3		1		2



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1. Progress this quarter by task, with specific deliverables:

A. Maintain Contact Lists

Revisions/Deletions

Ongoing

B. Publish Newsletter

- 3,661 individuals received each issue of the newsletter. Three issues of the newsletter were produced during this quarter. Electronic distribution of the newsletter occurred via e-mail.

Volume 10, Number 10

October 2008

Volume 10, Number 11

November 2008

Volume 10, Number 12

December 2008

C. Distribute Technology Transfer Materials

- 3,172 technical materials were distributed this quarter.

NJDOT Work Zone Safety Setup Guide

October-December 2008

New MUTCD Retro-reflectivity Requirements

October-November 2008

Teen Driver Work Zone Safety Packets

October-December 2008

D. Provide an Information Service

Technical Assistance

Ongoing

LTAP Stakeholder Meeting

October 3, 2008

APWA NJ Executive Committee

October 8, 2008

NLTAPA Executive Committee Meeting

October 20, 2008

ASCE Chapter Meeting

October 21, 2008

Teen Driver Press Conference

October 21, 2008

GPRI Conference Meeting

November 5, 2008

NJDOT Environmental Forum Planning Meeting

November 10, 2008

Safe Passages Conference Committee Meeting

November 12, 2008

NLTAPA Roundtable Discussion

November 14, 2008

NLTAPA Executive Committee Meeting

November 17, 2008

NJSME Annual Meeting

November 19, 2008



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APWA NJ Chapter Annual Meeting	November 20, 2008
Rutgers Paving Conference Planning Meeting	December 5, 2008
NLTAPA Executive Committee Meeting	December 15, 2008
APWA NJ Executive Committee	December 17, 2008
NJ Work Zone Safety Partnership Meeting	December 18, 2008

E. Training

Road Safety Audit for Locals Workshop	October 7, 2008
NJDOT Research Showcase	October 16, 2008
NACE Fall Forum	October 17, 2008
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Traffic Control Coordinator Program	December 9-12, 2008
Traffic Control Coordinator Refresher Workshop	December 12, 2008

F. Evaluate the Effectiveness of the Program

Course Evaluations	Ongoing
Customer Survey	October-November 2008
October – December 2008 Quarterly Report	December 2008

G. Special Projects

Final Report of 2004 and 2005 Implementation Study	October 2008
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4. Progress on Implementation and Training Activities:

All of the activities of this technology transfer project, and their implementation dates are included above.

5. Problems/Proposed Solutions:

Year 1 Budget	\$60,000
Years 1 & 2 Cumulative Budget	
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$60,000
Modified Contract Amount:	\$
Total Project Expenditure to date	\$60,000
% of Total Project Budget Expended	100%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	Flexible Overlays for Rigid Pavements		
RFP NUMBER: 200X-XXX	NJDOT RESEARCH PROJECT MANAGER: Lad Szalaj		
TASK ORDER NUMBER: TO 184 / RU Acct 4-26554	PRINCIPAL INVESTIGATOR(S): Dr. Ali Maher/Mr. Thomas Bennert		
Project Starting Date: 1/1/2006 Original Project Ending Date: 12/31/2007 Modified Completion Date: 12/31/2008	Period Covered: 4 th Quarter 2008-Not A Final- (This is a "Not A Final" Quarterly Report for this project, an addendum report for this quarter will be submitted at a later date. This report does not release the sponsor from claims for work done or services performed by the University during this time period)		

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Mobilization	6.80%	\$ 45,000.00	0.0%	\$ -	100.0%	\$ 45,000
2	Literature Search	2.70%	\$ 17,500.00	0.0%	\$ -	100.0%	\$ 17,500
3	3-D FEM Modeling	37.50%	\$ 250,412.00	0.0%	\$ -	100.0%	\$ 250,412
4	HMA Mixture Design for HMA Overlay Materials	26.90%	\$ 179,588.00	0.0%	\$ -	100.0%	\$ 179,588
5	Laboratory Test Simulation to Match Model Prediction	15.90%	\$ 105,850.00	0.0%	\$ -	100.0%	\$ 105,850
6	Development of Draft HMA Mixture Specifications	3.10%	\$ 20,066.00	0.0%	\$ -	100.0%	\$ 20,066
7	Development of "Decision Tree" Protocol for the Design of Flexible Overlays on Rigid Pavements	3.00%	\$ 19,577.00	5.0%	\$ 979	100.0%	\$ 19,577
8		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
9		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
10		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
11		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
12		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
13		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
14		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
15		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
16		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
17		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
18		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
19		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
20	Final Report and Quarterly Reporting	4.10%	\$ 30,689.00	15.0%	\$ 4,603	90.0%	\$ 27,620
	TOTAL	100.00%	\$ 668,682		\$ 5,582		\$ 665,613

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Project Objectives:

The objective of the research project is to develop guidelines for the NJDOT to properly select flexible pavement “systems” that can provide sufficient pavement life when used on rigid pavements (PCC).

Project Abstract:

Although reflective cracks significantly shorten the pavement service life, there is a lack of a performance-based HMA mixture design specification for routine use to develop HMA mixtures for use as flexible overlays for rigid pavements. Furthermore, neither the NCHRP 1-37A (Mechanistic-Empirical Pavement Design Guide) nor NCHRP 9-17 (Superpave Support and Models Management) specially address laboratory tests or mixture design procedures for the evaluation of reflective cracking, although the recently initiated NCHRP 1-41 (Models for Predicting Reflective Cracking of Hot Mix Asphalt Overlays) led by the Texas Transportation Institute (TTI) will try to provide guidance on these issues. Therefore, there is an urgent need to develop a performance-based HMA mixture design specification for different HMA mixtures for New Jersey, as well as evaluate and characterize new HMA mixtures and additives, to aid in resisting/prolonging the on-set of reflective cracking.

The research study will utilize information from literature searches, surveys, finite element modeling, and extensive field and laboratory testing to develop guidelines for use in the HMA overlay design of composite/PCC pavements. A “Decision Tree” system, that will utilize field forensic testing, as built information, and traffic, will also be developed, which will aid the NJDOT is designing longer life HMA overlays for rigid pavements.

1. Progress this quarter by task:

Completing final report for submittal.

The 4th test section, Rt. 73, will not be included in the study due to the late construction. As of the time of this Quarterly Report, the test section was beginning construction and tentatively scheduled for completion at the end of November 2008.

2. Proposed activities for next quarter by task:

N.A.

3. List of deliverables provided in this quarter by task (product date):

N.A.

4. Progress on Implementation and Training Activities:



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N.A.

5. Problems/Proposed Solutions:

N.A.

Year 1 Budget	\$382,009
Years 1 & 2 Cumulative Budget	\$668,682
Years 1, 2 & 3 Cumulative Budget	N.A.
Total Project Budget	\$668,682
Modified Contract Amount:	
Total Project Expenditure to date	\$665,613
% of Total Project Budget Expended	99.5%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	Safety Comparison of Roadway Design Elements of Urban Collectors with Access		
RFP NUMBER: 2007-08	NJDOT RESEARCH PROJECT MANAGER: Ed Kondrath		
TASK ORDER NUMBER: TO 202 / RU Acct 4-22775	PRINCIPAL INVESTIGATOR: Dr. Kaan Ozbay/Mr. Bekir Bartin		
Project Starting Date: 01/01/2007 Original Project Ending Date: 12/31/2007 Modified Completion Date: 12/31/08	Period Covered: 4th Quarter 2008-FINAL		

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Mobilization	19.78%	\$ 30,000	0.00%	\$ -	100.00%	\$ 30,000
2	Phase 1: Literature Search	6.59%	\$ 10,000	0.00%	\$ -	100.00%	\$ 10,000
3	Task 1: Literature Review	13.19%	\$ 20,000	0.00%	\$ -	100.00%	\$ 20,000
4	Task 2: Case Studies	34.73%	\$ 52,679	0.00%	\$ -	100.00%	\$ 52,679
5	Task 3: Review of Existing Strategies	19.12%	\$ 29,000	15.00%	\$ 4,350	100.00%	\$ 29,000
6	Task 4: Final Report	6.59%	\$ 10,000	50.00%	\$ 5,000	100.00%	\$ 10,000
7		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
8		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
9		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
10		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
11		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
12		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
13		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
14		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
15		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
16		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
17		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
18		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
19		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
20		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
	TOTAL	100.00%	\$ 151,679		\$ 9,350		\$ 151,679

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Project Objectives:

1. Select sites where safety improvements have been implemented.
2. Collect before and after crash data in addition to geometry and traffic data.
3. Use a statistically robust evaluation technique to determine the impact of these treatments.
4. Translate these results into so-called "Accident Modification Factors" for the representative case studies.
5. Analyze and interpret the results and provide recommendations.



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Project Abstract:

The **main goal** of this study identified by NJDOT can be defined as “the quantification of the effects of management treatments on roadway operations and safety on urban collectors with access”.

Since, urban collector road runs through highly diversified areas, various factors have to be considered when before-and-after comparisons of improvements in terms of safety are conducted in this study. For 25-40 mph urban collectors with access, these are:

1. Increase in lane widths (10' or 11' to 12'),
2. Construction of 4,6,8, or 10 foot shoulders,
3. Removal of trees in median and border areas,
4. Installation of guide rails, and vertical & horizontal geometry changes to improve sight distances.

A number of sites along 25-40 mph urban collectors with access where safety improvements have been implemented will be determined in close collaboration with NJDOT. Special attention will be given to the selection of sites that accurately represent the design elements described above. Once the site selection process is completed, historical crash data for each of these sites will be collected.

NJDOT crash database is the main source of data for this comparative evaluation study. The impact of improvements on safety will be determined by an analysis of this NJDOT crash database for a period of three years before and three years after the implemented roadway treatment. In addition to the crash data, traffic and other relevant data will also be collected because the selection of technique to be implemented will be based on its impact of safety as well traffic performance. Thus, the final determination of the impacts of the potential techniques for future candidate sites will be based on a combined assessment of their impacts on traffic performance and safety are important considerations when deciding.

1. Progress this quarter by task:

Phase 1 - Literature Search: This task is completed.



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Task 1. Literature Review: This task is completed.

Task 2. Case Studies:

We studied 8 case studies in NJ and 2 case studies in other States (Ohio and California).

Task 3: Review of Existing Strategies:

This task is complete.

Task 4: Final Report

This task is complete. Final report is submitted 3 months prior to the ending of the project.

2. Proposed activities for next quarter by task:

3. List of deliverables provided in this quarter by task (product date):

1. Final report

4. Progress on Implementation and Training Activities:

5. Problems/Proposed Solutions:

None this quarter.

Year 1 Budget	\$151,679
Years 1 & 2 Cumulative Budget	
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$151,679
Modified Contract Amount:	
Total Project Expenditure to date	\$151,679
% of Total Project Budget Expended	100%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	Stormwater System Monitoring and Evaluation		
RFP NUMBER: 2007-10	NJDOT RESEARCH PROJECT MANAGER: Edward Kondrath		
TASK ORDER NUMBER: TO 200 / RU Acct 4-28300	PRINCIPAL INVESTIGATOR: Dr. Qizhong (George) Guo		
Project Starting Date: 01/01/2007 Original Project Ending Date: 12/31/2008 Modified Completion Date: 06/30/2009	Period Covered: 4 th Quarter 2008		

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Mobilization	1.61%	\$ 3,000	0.0%	\$ -	100.0%	\$ 3,000
2	Pre Literature Search	1.61%	\$ 3,000	0.0%	\$ -	100.0%	\$ 3,000
3	1. LITERATURE SEARCH	6.99%	\$ 13,000	0.0%	\$ -	100.0%	\$ 13,000
4	2. TECHNICAL PANEL	5.37%	\$ 10,000	0.0%	\$ -	100.0%	\$ 10,000
5	3. THREE REGIONS	8.60%	\$ 16,000	0.0%	\$ -	100.0%	\$ 16,000
6	4. REPRESENTATIVE DEVICES	5.37%	\$ 10,000	0.0%	\$ -	100.0%	\$ 10,000
7	5. PRE-MONITORING CLEAN-OUT	5.37%	\$ 10,000	0.0%	\$ -	100.0%	\$ 10,000
8	6. MONITORING AND ANALYSIS	40.31%	\$ 75,000	10.0%	\$ 7,500	55.0%	\$ 41,250
9	7. MAINTENANCE GUIDANCE	6.99%	\$ 13,000	0.0%	\$ -	0.0%	\$ -
10	8. Final Report and Quarterly Reporting	17.78%	\$ 33,080	5.0%	\$ 1,654	15.0%	\$ 4,962
11		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
12		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
13		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
14		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
15		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
16		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
17		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
18		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
19		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
20		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
	TOTAL	100.00%	\$ 186,080		\$ 9,154		\$ 111,212

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Project Objectives:

1. Monitor the amounts of sediment, oil, grease, and buoyant debris that would be actually trapped in the stormwater treatment system units installed by NJDOT.
2. Relate the trapped amounts of sediment, oil, grease, and buoyant debris to highway drainage area characteristics.
3. Provide NJDOT with quantitative guidance on the maintenance/cleanup schedule and measures to reduce maintenance/cleanup frequency.

Project Abstract:

To improve the quality of highway runoff and meet the new stormwater management requirements, the New Jersey Department of Transportation (NJDOT) has installed numerous prefabricated stormwater treatment systems throughout the state produced by a range of manufacturers. The use of such systems, known as Manufactured Treatment Devices (MTDs), is expected to continue in the foreseeable future. As the responsible party for the maintenance of these MTDs, NJDOT is interested in determining optimum maintenance intervals and expected maintenance costs for the range of MTDs utilized by the Department. This project will monitor and document maintenance procedures, intervals, and costs for a representative range of MTDs.

1. Progress this quarter by task:

Task 6 (monitoring and evaluation) was continued. The monitoring and evaluation was expanded to include the time period prior to the “pre-monitoring cleanout.” Quantification of physical and chemical characteristics of the “pre-monitoring cleanout materials” was completed. Observations about the sites including type and amount of gross solids on the ground, soil type, and land use type were continued. Design info such as drainage areas and constructions plans was continued to be collected. The selected and cleaned 12 treatment devices have continued to be monitored including measurements of the sediment and floatables depths inside the devices.

2. Proposed activities for next quarter by task:

Task 6 (monitoring and evaluation) will be continued. This period of post-cleanout monitoring and evaluation is planned to be for one full year.

3. List of deliverables provided in this quarter by task (product date):

None.

4. Progress on Implementation and Training Activities:

1) The NJDOT maintenance personnel were involved in the actual cleanout of the devices. The NJDOT maintenance personnel as well as the contractors gained the valuable field maintenance experience.



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- 2) Early observations and suggestions on maintenance accessibility and interval were provided to NJDOT. The NJDOT was suggested to add manufactured treatment devices into the highway database such as the "Straight Line Diagrams," to additionally consider device accessibility during design and construction despite other constraints, and to minimize the amount of gross solids that would enter the devices.
- 3) A device inspection form was made and provided to NJDOT Maintenance Division for their use.
- 4) A field trip was organized for the NJDOT personnel to Montgomery County, Maryland on June 5, 2008 to observe their maintenance program on stormwater manufactured treatment devices.
- 5) Progress of the project and early observations and recommendations were presented at the NJDOT Research Showcase on November 28, 2007 as well as on October 16, 2008.

5. Problems/Proposed Solutions:

Some difficulties were experienced with collecting the original design info especially the original drainage reports. Multiple sources will be approached including the original designer, NJDOT and NJDEP.

Year 1 Budget	\$186,080
Years 1 & 2 Cumulative Budget	
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$186,080
Modified Contract Amount:	\$186,080
Total Project Expenditure to date	\$111,212
% of Total Project Budget Expended	59.77%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	Evaluation of Warm Asphalt Technology		
RFP NUMBER: 2008-01	NJDOT RESEARCH PROJECT MANAGER: Lad Szalaj		
TASK ORDER NUMBER: TO 218 / RU Acct 4-27212	PRINCIPAL INVESTIGATOR: Thomas Bennert		
Project Starting Date: 01/01/2008 Original Project Ending Date: 12/31/2009 Modified Completion Date:	Period Covered: 4 th Quarter 2008		



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Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Mobilization	10.52%	\$ 30,000	0.0%	\$ -	100.0%	\$ 30,000
2	Literature Search	2.88%	\$ 8,200	0.0%	\$ -	100.0%	\$ 8,200
3	Influence of Aggregate Blend Moisture Content	6.96%	\$ 19,840	55.0%	\$ 10,912	70.0%	\$ 13,888
4	Assessment of Compaction of Different WMA's	6.75%	\$ 19,238	25.0%	\$ 4,810	45.0%	\$ 8,657
5	Laboratory Sensitivity on the Gyratory Compaction of WMA's	13.11%	\$ 37,360	10.0%	\$ 3,736	20.0%	\$ 7,472
6	Laboratory Specimen Conditioning for Performance Testing	10.33%	\$ 29,436	0.0%	\$ -	5.0%	\$ 1,472
7	Asphalt Binder Grade Selection	16.08%	\$ 45,835	10.0%	\$ 4,584	25.0%	\$ 11,459
8	Use of RAP	12.37%	\$ 35,250	0.0%	\$ -	5.0%	\$ 1,763
9	In-Project Implementation - Field Trials	13.82%	\$ 39,390	25.0%	\$ 9,848	55.0%	\$ 21,665
10	Final Report and Quarterly Reporting	7.20%	\$ 20,522	0.0%	\$ -	0.0%	\$ -
11		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
12		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
13		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
14		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
15		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
16		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
17		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
18		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
19		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
20		0.00%	\$ -	0.0%	\$ -	0.0%	\$ -
	TOTAL	100.00%	\$ 285,071		\$ 33,889		\$ 104,575

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Project Objectives:

The objective of NJDOT 2008-01, *Warm Pavement Technology*, is to evaluate the different facets of warm mix asphalt production and performance for future use by the New Jersey Department of Transportation (NJDOT). An assessment of available warm mix additives/technologies will be conducted to provide NJDOT with preliminary recommendations for future use. The assessment will be based on Literature Reviews/Interviews, as well as a detailed laboratory and field research program detailed in this research proposal. This includes critical factors during the laboratory mixture design, as well as critical factors during the production and placement of warm mix asphalt. The research project will also evaluate the potential end uses of warm mix asphalt. This includes the typical use in



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structural pavements, as well as the potential use for pothole/maintenance mixes that could be used for long haul/long dwell time projects.

Project Abstract:

The research proposal is broken down into a Literature Search and nine major tasks. The research team will evaluate possible modifications to mixture design and analysis procedures for warm mix asphalt. This will be conducted through a literature search and interview process and then using laboratory experiments that address critical areas where hot and warm mix asphalt differ significantly. This includes limits to aggregate moisture, procedure for the selection of WMA and dosage rate, specimen fabrication, binder grade selection, and recycled asphalt materials (RAP). A sensitivity study to provide recommendations as to which WMA's are preferred, as well as to assess the affects of mixture volumetrics after compaction in the gyratory compactor will provide guidance to warm mix additive selection and expected issues with the Superpave volumetric design when using these additives. It is also proposed that a warm mix test trial, designed based on recommendations from the research study, be included as a validation/verification task. It is important to include the field study so a proper comparison can be verified between laboratory and field produced materials. An Implementation Plan at the conclusion of the study will provide a 1-Day Workshop regarding the use of Warm Mix Additives. The workshop will provide procedures and recommendations for warm mix additive selection, mixture design, and quality control procedures. The workshop will be conducted in the state of the art lecture hall facility at CAIT.

1. Progress this quarter by task:

Task 1 - Mobilization

Mobilization for the project has been completed.

Task 2 – Literature Review

The Feasibility/Literature Review was submitted to the NJDOT for view and comments and was eventually accepted. The technical working group (TWG) then gave the official OK to continue with the testing program.

Task 3 – Influence of Aggregate Moisture Content

Task 3 is almost complete. TSR and Hamburg testing are complete for lower aggregate absorption mixture and sample preparation for the high absorption aggregate are almost finished. The results of the lower aggregate absorption mixture clearly showed that residual water absorbed in the aggregate have an influence on the Tensile Strength Ratio (TSR) and Hamburg stripping results. The full dataset will be presented at the Quarterly Meeting, however, a figure showing the TSR testing is shown below. The test procedure followed AASHTO T283, except loose mix conditioning was not conducted in fear it could “dry” out the mix. This process (loose mix conditioning) is also not representative of field conditions.



Table 1 - Summary of TSR Results for Low Absorptive Aggregates

Mixing Temp (F)	Moisture Content (%)	TSR	Tensile Strength (U)	Tensile Strength (C)
270	0	62.6	224.7	140.7
	3	63.0	195.8	123.3
	6	52.0	184.6	96.1
315	0	88.2	240.7	212.2
	3	65.8	236.4	155.5
	6	64.0	217.7	139.3

Task 4 – Compactibility of Different WMA's

Based on the Feasibility Study and new technologies introduced to New Jersey (REVIX), the Compactibility Study has been slightly modified. The study will mainly focus on preblended warm mix additives (Rediset, Sasobit, and REVIX), and will also include Advera that is added during the mixing process. A number of factors will be evaluated to measure workability/compactibility;

- Casola Method for determining mixing and compaction temperatures of binder modified with the warm mix additives;
- Thin-film rheology – recently introduced to asphalt with the work by Gerry Reinke at Mathy Construction, Thin-Film Rheology gives an indication of the lubrication that occurs between aggregates (i.e. – higher the lubrication, the better compaction).
- University of Massachusetts Workability Device – the workability is measured as a function of temperature and torque resistance during mixing. Unlike the previous two tests, this test is conducted on the mixture itself.
- Marshall Compaction Hammer – constant energy is applied to the mix through a constant weight falling at a constant height to a known number of blows. Previous work by Rutgers University has shown the Marshall Hammer to be sensitive enough to temperature/workability to pick up the influence of warm mix additives.
- Gyratory Compaction – used as a baseline for comparison.

Sample fabrication has already begun for the Massachusetts Workability Device, Marshall and Gyratory compaction. Asphalt binder testing using the Casola Method and the Thin-Film Rheology has also been completed and the test results should be available for presentation at the Quarterly Meeting.

Task 5 – Laboratory Specimen Preparation Procedure

Began mobilization for testing.



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Task 6 – Asphalt Binder Selection

Information was provided to Rutgers regarding a proposed compaction temperature limit that is based on the Aging Ratio of the asphalt binder, where the aging ratio is defined at G^*_{RTFO}/G^*_{Orig} . After receiving this information, Rutgers contacted both SemMaterials and NuStar, the two most prominent asphalt binder manufacturers in New Jersey, to obtain the general Aging Ratio information for various asphalt binder grades produced by the refineries. A table of the recommended lower limit for compaction temperature without the need to bump the binder grade has been generated and will be presented at the Quarter Meeting. This proposed table will be evaluated in the laboratory using the Asphalt Pavement Analyzer and Flow Number.

Sample fabrication is being conducted for baseline mixes (no warm mix additives) and also for preblended additives (Sasobit, REVIX, and Rediset).

Task 7 – Use of Higher RAP Percentages

N.A.

Task 8 – Field Trials

Two field trials have been conducted and materials sampled for testing. The first project was organized by CAIT and it took place on I-78 by Trap Rock Industries. REVIX was blended at 0.6% by weight of binder to a PG76-22. The WMA modified binder was then mixed in a 12H76 mix containing 25% RAP. Loose mix and cores were sampled for evaluation. Testing to date shows the warm mix product achieved excellent results regarding densities in the field (4 to 5% air voids). A few truck loads were actually delivered to the site at 220F and the resultant field densities from cores were measured between 7 and 8% air voids. Laboratory testing is on-going.

The second field trial was conducted in New York by the NYSDOT. The warm mix product was a Low Emissions Asphalt (LEA) and was produced with and without RAP, as well as a baseline mix also being provided. Dynamic modulus, repeated load, and Overlay Tester testing is currently being conducted.

2. Proposed activities for next quarter by task:
3. List of deliverables provided in this quarter by task (product date):
4. Progress on Implementation and Training Activities:
5. Problems/Proposed Solutions:



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Year 1 Budget	\$166,385
Years 1 & 2 Cumulative Budget	\$285,071
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$ 285,071
Modified Contract Amount:	
Total Project Expenditure to date	\$ 104,575
% of Total Project Budget Expended	36.68%

NJDOT Research Project Manager Concurrence: _____ Date: _____



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QUARTERLY PROGRESS REPORT

Project Title:	Inorganic Protective Coatings and Fiber Reinforced Polymers: Route 47 Wildwood Drawbridge Bridge House Rehabs		
RFP NUMBER: 200X-XXX	NJDOT RESEARCH PROJECT MANAGER: Robert Sasor		
TASK ORDER NUMBER: TO 215 / RU Acct 4-28972	PRINCIPAL INVESTIGATOR: P. Balaguru		
Project Starting Date: 11/01/2007 Original Project Ending Date: 10/31/2008 Modified Completion Date:	Period Covered: 4 th Quarter 2008		

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Rehabilitate North Tower	31.43%	\$ 11,000	3.00%	\$ 330	100.00%	\$ 11,000
2	Rehabilitate South Tower	62.86%	\$ 22,000	3.00%	\$ 660	100.00%	\$ 22,000
3	Monitor Coating, FRP, and Other Repairs	1.43%	\$ 500	50.00%	\$ 250	100.00%	\$ 500
4	Final Report	4.28%	\$ 1,500	100.00%	\$ 1,500	100.00%	\$ 1,500
5		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
6		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
7		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
8		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
9		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
10		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
11		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
12		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
13		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
14		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
15		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
16		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
17		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
18		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
19		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
20		0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
	TOTAL	100.00%	\$ 35,000		\$ 2,740		\$ 35,000

Blue text is entered once at the beginning of the project

Green text is updated ever quarter

Black text is automatically updated or static

Project Objectives:

Repair two bridge-house towers to prevent deterioration due to leaking and salt intrusion.

Project Abstract:



CAIT

Center for Advanced Infrastructure & Transportation
Rutgers, The State University of New Jersey

The bridge-house towers have problems due to leaking and salt intrusion. These problems will be fixed using fiber reinforced systems and inorganic coatings.

1. Progress this quarter by task:

The repair and rehabilitation of both towers are complete. We did one more inspection.

2. Proposed activities for next quarter by task:

Submit the final report

3. List of deliverables provided in this quarter by task (product date):

None

4. Progress on Implementation and Training Activities:

None

5. Problems/Proposed Solutions:

None

Year 1 Budget	\$35,000
Years 1 & 2 Cumulative Budget	
Years 1, 2 & 3 Cumulative Budget	
Total Project Budget	\$35,000
Modified Contract Amount:	
Total Project Expenditure to date	\$ 35,000
% of Total Project Budget Expended	100%

NJDOT Research Project Manager Concurrence: _____ Date: _____